CLAIMS

1. A heat exchanger, comprising:

a flattened tube including a port extending to an end of the tube;

a cap having a generally centrally located slot sized to snugly receive said end and allow said tube to pass fully through said slot, said cap having a body in which said slot is formed and having an exterior surface nominally concentric with said slot, said exterior surface having a tube facing side and an opposite side spaced therefrom, the periphery of said cap at said tube facing side being larger than the periphery at said opposite side; and

a tank having a body with a cap receiving end, a fluid receiving or discharging end spaced from the cap receiving end, an interior cavity opening to said cap receiving end, and a port extending from said cavity at a location remote from said cap receiving end to a location at or near said receiving or discharging end, said cavity having a stepped wall including a first section sized to snugly receive said cap tube facing side, a second section spaced from said first section and sized to abut said tube end without blocking the internal port thereat, and an intermediate section between said first and second sections and sized to abut said cap at a location between said tube facing side and said opposite side when said tube facing side is received in said first section;

said tank receiving said cap with said intermediate section acting as a cap stop to limit entry of said cap into said tank and said

second section acting as a tube stop limiting entry of said tube end into said cavity.

2. The heat exchanger of claim 1 wherein said cap is of a generally flat disc-like shape and has, on said opposite side, a tube receiving collar surrounding said slot thereat.

3. The heat exchanger of claim 1 wherein said cap exterior, intermediate said sides, is a convex shaped dome.

4. The heat exchanger of claim 3 wherein said slot has a flared concave end at said tube receiving side.

5. The heat exchanger of claim 1 wherein said cap, at said opposite side, includes a tube receiving collar surrounding said slot thereat, said collar extending into said cavity.

6. The heat exchanger of claim 5 wherein said cap exterior, intermediate said sides, is a convex shaped dome.

7. The heat exchanger of claim 5 wherein said slot has a flared concave end at said tube receiving side.

8. The heat exchanger of claim 1 wherein said tank includes a stub in which said port is located.

9. The heat exchanger of claim 1 including at least one tang at the interface of said tube and said slot and sized to provide an interference fit between said tube and said cap to hold said tube in said slot during assembly without preventing disposition of said tube in said slot.

10. The heat exchanger of claim 9 wherein said at least one tang is on said cap within said slot and engages a wall of said tube.

11. The heat exchanger of claim 1 wherein said interior cavity, adjacent said receiving or discharging end, has a cross sectional shape of an oval.

12. The heat exchanger of claim 1 wherein said interior cavity, adjacent said receiving and discharging end, has a curved surface converging on said port.

13. A heat exchanger, comprising:

a flattened tube including a plurality of internal ports extending to an end of the tube;

a cap having a generally centrally located slot sized to snugly receive said end and allow said tube to pass fully through said slot, said cap having a body in which said slot is formed and having an exterior surface nominally concentric with said slot, said exterior surface having a flat tube facing side and an opposite crowned side spaced therefrom, the periphery of said cap at said tube facing side being larger than the periph-

ery at said opposite side, a collar on said body and disposed about said slot and located on said opposite crowned side; and

a tank having a body with a cap receiving end, a fluid receiving or discharging end spaced from the cap receiving end, an interior cavity having an oval cross section and opening to said cap receiving end, a stub on said fluid receiving and discharging end, and a port extending from said cavity at a location remote from said cap receiving end through said stub to a location at said receiving or discharging end, said cavity having a stepped wall including an oval-shaped first section sized to snugly receive said cap tube facing side, an oval-shaped second section spaced from said first section and sized to abut said tube end without blocking the internal ports thereat, and an intermediate oval-shaped section between said first and second sections and sized to abut said cap at a location on said opposite crowned side when said tube facing side is received in said first section;

said tank receiving said cap with said intermediate section acting as a cap stop to limit entry of said cap into said tank and said second section acting as a tube stop limiting entry of said tube end into said cavity.

14. The heat exchanger of claim 13 wherein said second section is domed and oval-shaped.

15. A heat exchanger, comprising:

a flattened tube including a plurality of internal ports extending to an end of the tube;

a cap having a generally centrally located slot sized to snugly receive said end and allow said tube to pass fully through said slot, said cap having a flat, disc-like body in which said slot is formed and having an exterior surface nominally concentric with said slot, said exterior surface having a tube facing side and an opposite side spaced therefrom, the periphery of said cap at said tube facing side being larger than the periphery at said opposite side, a collar on said body and disposed about said slot and located in said opposite side; and

a tank having a body with a cap receiving end, a fluid receiving or discharging end spaced from the cap receiving end, an interior cavity or having an oval cross section and opening to said cap receiving end, and a port extending from said cavity at a location remote from said cap receiving end to a location at or near said receiving or discharging end, said port opening to a side of said body at said location, said cavity having a stepped wall including a first section sized to snugly receive said cap tube facing side, a second section spaced from said first section and sized to abut said tube end without blocking the internal ports thereat, and an intermediate section between said first and second sections and sized to receive said collar and to abut said cap at a location between said tube facing side and said opposite side when said tube facing side is received in said first section;

said tank receiving said cap with said intermediate section acting as a cap stop to limit entry of said cap into said tank and said second section acting as a tube stop limiting entry of said tube end into said cavity.